GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

no action OK OK

Date: 9/9/77

Project Title: *Radiological Safety and Laboratory Techniques Course*

Project No: *B-10-514*

Project Director: *M. W. Carter*

Sponsor: *Center for Disease Control, DHEW*

Agreement Period: From *8/25/77* Until *11/12/77*

Type Agreement: *Contract No. 200-77-0424*

Amount: *$9,930*

Reports Required: *Publication Preprints, Publication Reprints; Final Report*

Sponsor Contact Person (s):

Technical Matters

*Robert L. McClure*
*Employer Development Specialist*
*Personnel Office*
*Center for Disease Control, DHEW*
*Atlanta, Georgia 30333*

Contractual Matters
(thru OCA)

*John L. Williams*
*Contracting Officer*
*Contracts & Purchases Branch*
*Procurement & Grants Office*
*Center for Disease Control, DHEW*
*Atlanta, Ga. 30333*

Defense Priority Rating: *none*

Assigned to: *OIP* (School/Laboratory)

COPIES TO:

- Project Director
- Division Chief (EES)
- School/Laboratory Director
- Dean/Director—EES
- Accounting Office
- Procurement Office
- ✓ Security Coordinator (OCA)
- Reports Coordinator (OCA)
- Library, Technical Reports Section
- Office of Computing Services
- Director, Physical Plant
- EES Information Office
- Project File (OCA)
- Project Code (GTRI)
- Other _____

CA-3 (3/76)

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION

# SPONSORED PROJECT TERMINATION

no action
OCS

Date: OCTOBER 14, 1977

Project Title: RADIOLOGICAL SAFETY AND LABORATORY TECHNIQUES TRAINING COURSE

Project No: B-10-514

Project Director: MELVIN W. CARTER

Sponsor: DHEW/CENTER FOR DISEASE CONTROL

Effective Termination Date: 9/22/77

Clearance of Accounting Charges: 9/30/77

Grant/Contract Closeout Actions Remaining:

- X Final Invoice and Closing Documents
- _ Final Fiscal Report
- _ Final Report of Inventions
- _ Govt. Property Inventory & Related Certificate
- _ Classified Material Certificate
- _ Other _____

Assigned to: OIP (School/Laboratory)

COPIES TO:

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- Project Code (GTRI)
- Other _____

CA-4 (3/76)

# RADIOLOGICAL SAFETY

# AND

# LABORATORY TECHNIQUES

FINAL REPORT

to the

CENTER FOR DISEASE CONTROL

U.S. PUBLIC HEALTH SERVICE

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

September 26, 1977

Office of Interdisciplinary Programs
Georgia Institute of Technology

Contract No. 200-77-0424

# RADIOLOGICAL SAFETY AND LABORATORY TECHNIQUES

## SUMMARY

The five-day technical short course, "Radiological Safety and Laboratory Techniques," was conducted on the campus of the Georgia Institute of Technology, primarily in facilities of the Department of Continuing Education. It was designed for and presented to a group of selected personnel from the Center for Disease Control (CDC) during the period September 12-16, 1977. It is the second course of its nature developed and presented for the CDC.

Sponsorship was by the CDC and the Office of Interdisciplinary Programs of Georgia Tech. Funding, under a fixed price contract, was provided by the CDC, whereas faculty, services, and facilities necessary to conduct the course were furnished by Georgia Tech.

The course was designed for approximately twenty students. Actually, sixteen participated in parts of the program and fourteen satisfactorily completed the requirements and were awarded certificates. The CDC Radiation Safety Officer participated as an observer in certain of the lectures.

Based on student evaluations, the consensus appears to be that the course met its objectives and was presented in an interesting and informative manner. Several useful comments and suggestions were made in the evaluation process.

The training experience seems to have been successful in attaining the objectives of supplying relevant information and data to the group on a balanced basis, providing a scientific background, demonstrating laboratory techniques and radiological safety procedures, and identifying certain available resources which can be used in the individuals' work environment. Major emphasis was placed on specific laboratory methods employing radionuclides and related radiological safety requirements and procedures.

## STUDENTS

Trainees were selected for participation by the CDC. Many volunteered for the training program whereas certain ones were recommended by supervisors. A prime criterion was whether the training would be applicable to improving job performance.

The short course was designed for approximately twenty sutdents and fourteen satisfactorily completed all requirements. Sixteen individuals participated in certain phases of the training program and provisions were made to accomodate observers from the CDC.

Students were all employed by the CDC and were selected for training by pertinent officials of the CDC. A roster of participants, indicating general backgrounds, is enclosed and indicates the fact that two individuals were from Morgantown, West Virginia, and two were from Phoenix, Arizona.

Each of the fourteen students satisfactorily completing the requirements was awarded a certificate of completion. The training program was assigned 4.0 Continuing Education Units as required by Standard Nine of the Southern Association of Colleges and Schools and each student can obtain an official transcript through the Georgia Tech Registrar.

Students were assigned dosimeters which were worn while working with radioactivity. Student accumulative exposures were individually less than one millirem for the training experience.

## FACILITIES

Facilities of the Department of Continuing Education were used to conduct the lecture portions of the short course. This Department also provided logistical support including registration, and reproduction and distribution of hand-out materials.

Laboratories and certain demonstrations were presented in facilities of the School of Nuclear Engineering, School of Biology, and the Nuclear Research Center. These were satisfactory for providing suitable space to accomodate small groups of students as laboratory teams.

Parking space was readily available on campus and its use was facilitated by providing parking permits to the scheduled participants prior to course beginning. Meal service at lunch time was available at the Student Center, and Bradley Dining Hall, and at nearby off-campus restaurants.

## EQUIPMENT

During the laboratory sessions, students gained practical experience by using a variety of instruments. These included several end-window proportional counters for alpha and beta particle counting and solid state detectors with multi-channel analyzers for gamma radiation measurements.

Several liquid scintillation counters were used by the students. Also, the newly installed Gamma Cell, School of Biology, was used for a special laboratory session.

Survey meters included ionization chamber types for relatively high-level radioactivity measurements as well as Geiger-Muller types for determination of lower levels. Various instrument probes were utilized and certain ones were interchangeable with rate meters and integrating devices. These meters are extensively used in health physics activities.

## STAFF

The teaching staff for the short course consisted of experts from academic institutions (including the University of Georgia and Emory University), government agencies, and industry. They represented a broad spectrum of interests, experience, and points of view. Most were from Georgia Tech's Office of Interdisciplinary Programs, School of Nuclear Engineering, and Nuclear Reactor Center.

Special assistance in preparing and conducting the laboratories was provided by staff representing nuclear equipment manufacturers and the School of Nuclear Engineering and the Nuclear Reactor Center.

The caliber of individuals willing to participate as teachers in a technical short course of this kind is outstanding. Their cooperation and assistance were of major importance in presenting an effective training program. A list of the teaching faculty, including titles and affiliations, is enclosed.

## CURRICULUM

Approximately forty-two hours of instruction were presented during the five-day short course. Lectures were usually one hour in length and several subjects required the dedication of several lectures for adequate coverage. Several breaks were scheduled each day to provide a change of pace and to allow more personal interaction of the teachers with the students.

Four laboratories, each two and one-half hours in length, were scheduled. These were divided into specific sections which could be taught on a small group basis. This provided the opportunity for the students to work with specialized equipment and apparatus and perform laboratory operations.

The content of the short course is shown in the enclosed copy of the program. The subjects covered are identified as are the amounts of time devoted to each aspect of the program. Most speakers provided the students with lecture outlines, detailed papers, including graphs and charts, specific references, and other relevant information and data. These materials were compiled into a loose-leaf-style manual, which should be valuable to each student as a personal resource.

Each student was presented with a copy of the "Radiological Health Handbook." This publication of the Bureau of Radiological Health, Food and Drug Administration, is a comprehensive, useful reference for those working with radionuclides and related safety procedures.

A progress quiz and a final examination were integral parts of the course. Copies of these materials are enclosed. An appropriate review of the course was provided and faculty time was made available for special assistance as required.

Students were expected to review classroom notes, engage in reading pertinent parts of their manuals, and devote extra classroom time to completion of the laboratory assignments. From classroom performance and individual progress, it appeared this expectation was achieved.

## EVALUATION

This information is primarily based on a review of the short course evaluation forms completed by each student at the conclusion of the training program. In general, they are similar to those received from students in the previous course. A copy of the evaluation form is enclosed and copies of the completed forms have been furnished to the Project Officer.

The evaluation form is one normally used in our Continuing Education programs. It relates to general organization and conduct of training activities. The participants were overwhelmingly complimentary to the course organization and presentation. However, several suggestions were made relative to the hand-outs, audiovisual use, and specific lecturers. These will be given appropriate consideration in developing and conducting future programs.

Participants seemed to feel the training experience would be useful in performing their jobs. Most felt an appropriate balance had been achieved between fundamentals and practical applications. This fact is especially satisfying as the developmental efforts were essentially devoted to designing a practical training program directly related to general work practices of the group to be trained. Many expressed the view that the training should be spread over a longer period of time.

Several students expressed an interest in additional training which would be uniquely oriented to the specific procedures they use on a day-to-day basis. Training, to meet such expressed needs, could be provided to relatively small, specialized groups using the appropriate equipment and pertinent laboratory procedures.

This training experience will normally qualify an individual to meet the specific licensing requirements of pertinent regulatory agencies for laboratory use of tracer quantities of radionuclides. It provided a relevant background to understand and use radionuclides in the laboratory setting in a safe and effective manner.